

Amendments To the Claims

Sub 1
F1
D

Claim 1. (Currently Amended) A power chip resistor comprising:
a first and second film resistor each having (a) a substrate with a top surface, a bottom surface, a first end surface, an opposing end surface, a first side surface and an opposing side surface, (b) a film resistive element on the top surface of each substrate, (c) an end cap on the first end surface and electrically connected to the film resistive element, and (d) a second end cap on the opposing end surface and electrically connected to the film resistive element;

the second film resistor of approximately the same physical size as the first film resistor, the second film resistor of approximately the same orientation as the first film resistor;
an encapsulant between the top surface of the first film resistor and the bottom surface of the second film resistor;

a first nickel barrier electrically connecting the end cap on the first end surface of the first film resistor and the first end surface of the second film resistor and mechanically bonding the film resistors without adhesive;

a second nickel barrier electrically connecting the second end cap on the second end surface of the first film resistor and the second end cap on the second end surface of the second film resistor and mechanically bonding the film resistors without adhesive.

Claim 2. (Previously Amended) The power chip resistor of claim 2 wherein the film resistive elements are thick film resistive elements.

Claim 3. (Previously Amended) The power chip resistor of claim 1 wherein the film resistive elements comprise ruthenium oxide.

Claim 4. (Original) The power chip resistor of claim 1 wherein the encapsulant is inert.

Claim 5. (Original) The power chip resistor of claim 4 wherein the encapsulant is glass.

Claim 6. (Original) The power chip resistor of claim 5 wherein the encapsulant is glass frit.

Claim 7. (Previously Amended) The power chip resistor of claim 1 further comprising: a third film resistor having (a) a substrate with a top surface, a bottom surface, a first end surface, an opposing end surface, a first side surface and an opposing side surface, (b) a film resistive element on the top surface of the substrate, (c) an end cap on the first end surface electrically connected to the film resistive element, and (d) a second end cap on the opposing end surface and electrically connected to the film resistive element; a second encapsulant between the top surface of the substrate of the second film resistor and the bottom surface of the substrate of the third film resistor, the first nickel barrier electrically connected to the end cap of the first end surface of the third film resistor, the second nickel barrier electrically connected to the second end cap on the second end surface of the third film resistor.

Claim 8. (Previously Amended) The power chip resistor of claim 7 further comprising: a fourth film resistor having (a) a substrate with a top surface, a bottom surface, a first end surface, an opposing end surface, a first side surface and an opposing side surface, (b) a film resistive element on the top surface of the substrate, (c) an end cap on the first end surface electrically connected to the film resistive element, and (d) a second end cap on the opposing end surface and electrically connected to the film resistive element; a third encapsulant between the top surface of the substrate of the third film resistor and the bottom surface of the substrate of the fourth film resistor, the first nickel barrier electrically connected to the end cap of the first end surface of the fourth film resistor, the second nickel barrier electrically connected to the second end cap on the second end surface of the fourth film resistor.

SP1
5251

Claim 9. (Currently Amended)

A power chip resistor comprising:

a first and second film resistor each having (a) a substrate with a top surface, a bottom surface, a first end surface, an opposing end surface, a first side surface and an opposing side surface, (b) a film resistive element on the top surface of each substrate, (c) an end cap on the first end surface of each substrate electrically connected to the film resistive element, and (d) a second end cap on the opposing end surface of each substrate and electrically connected to the film resistive element; a glass encapsulant between the top surface of the substrate of the first film resistor and the bottom surface of the substrate of the second film resistor;

a first metal barrier covering and being electrically connected to the end caps on the first end surface of the substrate of the first and second film resistors and mechanically bonding the film resistors without adhesive;

a second metal barrier covering and being electrically connected to the second end caps on the opposing end surface of the substrate of the first and second film resistors and mechanically bonding the film resistors without adhesive.

Claim 10. (Previously Amended) The power chip resistor of 9 wherein the first and second metal barriers comprise a nickel alloy.

Claim 11. (Previously Amended) The power chip resistor of 10 wherein the first and second metal barriers comprise nickel.

Claim 12. (Previously Amended) The power chip resistor of claim 9 wherein the film resistive elements comprise ruthenium oxide.

Claim 13. (Original) The power chip resistor of claim 9 wherein the encapsulant is inert.

[Claim 14. (Previously Cancelled).] F

Claim 15. (Original) The power chip resistor of claim 14 wherein the encapsulant is glass frit.

Sub F

Claim 16. (Previously Amended) The power chip resistor of claim 9 further comprising:
a third film resistor having (a) a substrate with a top surface, a bottom surface, a first end surface,
an opposing end surface, a first side surface and an opposing side surface, (b) a film
resistive element on the top surface of the substrate, (c) an end cap on the first end surface
electrically connected to the film resistive element, and (d) a second end cap on the
opposing end surface and electrically connected to the film resistive element;
a second encapsulant between the top surface of the substrate of the second film resistor and the
bottom surface of the substrate of the third film resistor, the first nickel barrier
electrically connected to the end cap of the first end surface of the third film resistor, the
second nickel barrier electrically connected to the second end cap on the second end
surface of the third film resistor.

Claim 17. (Previously Amended) The power chip resistor of claim 16 further comprising:
a fourth film resistor having (a) a substrate with a top surface, a bottom surface, a first end
surface, an opposing end surface, a first side surface and an opposing side surface, (b) a
film resistive element on the top surface of the substrate, (c) an end cap on the first end
surface electrically connected to the film resistive element, and (d) a second end cap on
the opposing end surface and electrically connected to the film resistive element; a third
encapsulant between the top surface of the substrate of the third film resistor and the
bottom surface of the substrate of the fourth film resistor, the first nickel barrier
electrically connected to the end cap of the first end surface of the fourth film resistor, the
second nickel barrier electrically connected to the second end cap on the second end
surface of the fourth film resistor.

SAF
Fi.

Claim 18. (Previously Amended) A stacked chip resistor comprising:
a first chip resistor and a second chip resistor, each chip resistor having a substrate with a thick film resistive element attached to the substrate, a first end cap and a second end cap, each end cap being an electrical terminal connected to the thick film resistive element;
a layer of glass placed between the first chip resistor and the second chip resistor;
a first nickel barrier, the nickel barrier electrically connecting the first end cap of the first chip resistor and the first end cap of the second chip resistor;
a second nickel barrier, the nickel barrier electrically connecting the second end cap of the first chip resistor and the second end cap of the second chip resistor;
the nickel barriers bonding the chip resistors without adhesive.

21

[Claim 19. (Previously Cancelled)]

Claim 20. (Original) The stacked chip resistor of claim 18 wherein the first film resistor and the second film resistor further have ruthenium oxide resistive elements.

IF

Claim 21. (Original) The stacked chip resistor of claim 18 wherein the glass is glass frit.

Claim 22. (Original) The stacked chip resistor of claim 18 wherein each end cap is a silver alloy.

Claim 23. (Original) The stacked chip resistor of claim 22 wherein each end cap is a silver palladium.

SF

Claim 24. (Previously Amended) The stacked chip resistor of claim 18 further comprising:
a third chip resistor, the third chip resistor having a substrate with a thick film resistive element attached to the substrate, a first end cap and a second end cap, each end cap being an electrical terminal connected to the thick film resistive element,;
a second layer of glass placed between the second chip resistor and the third chip resistor, the first nickel barrier electrically connected to the first end cap of the third chip resistor, the

second nickel barrier electrically connected to the second end cap of the third chip resistor.

524
D1

Claim 25. (Previously Amended) The stacked chip resistor of claim 24 further comprising:
a fourth chip resistor, the fourth chip resistor having a substrate with a thick film resistive element attached to the substrate, a first end cap and a second end cap, each end cap being an electrical terminal connected to the thick film resistive element, the second chip resistor, and the third chip resistor;
a third layer of glass placed between the third chip resistor and the fourth chip resistor, the first nickel barrier electrically connecting the first end cap of the fourth chip resistor with the first end cap of the first chip resistor and the first end cap of the second chip resistor and the first end cap of the third chip resistor, the second nickel barrier electrically connected to the second end cap of the fourth chip resistor.

[Claims 26 - 29. (Previously Cancelled).]